

ABSTRACT OF THE INVENTION

An amorphous silicon layer is formed on a substrate, and then a protective layer and a reflective layer are formed in turn to form a film stack on portions of the amorphous silicon layer. The reflective layer is a metal material with reflectivity of laser, and the protective layer is able to prevent metal diffusion. When an excimer laser heats the amorphous silicon layer to crystallize the amorphous silicon, nucleation sites are formed in the amorphous silicon layer under the film stack of the protective layer and the reflective layer. Next, laterally expanding crystallization occurs in the amorphous silicon layer to form poly-silicon having crystal grains with size of micrometers and high grain order.